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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,080	11/19/2003	Robert A. Lieberman	IOS 99-105C	7001

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT PAPER NUMBER

2872

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/717,080

Applicant(s)

LIEBERMAN ET AL.

Examiner

Arnel C. Lavarias

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/14/04, 11/19/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 17-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 17-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The Examiner notes that, other than the preliminary amendments filed 6/14/04 and 11/19/03, no other submissions have been filed to the instant case by Applicants or Applicants' representative.

Election/Restrictions

2. It is noted that the current pending Claims 1-8, 17-27 are drawn to all the species non-elected in the restriction requirement set forth in the parent 09/334845 application, and as previously examined in the 09/730158 divisional application. Since the instant case is a continuation of the 09/730158 divisional application, the currently pending Claims 1-8, 17-27 will be examined.

Drawings

3. The drawings were received on 11/19/03. These drawings are objected to for the following reason(s) as set forth below.
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

Figure 1- 'd1'.

Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should

include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:

Page 3, line 1- 'Fig's' should read 'Fig.'

Page 3, line 6- delete extra period at end of line

Page 4, line 11- '(di)' and '(do)' are not shown in Figure 1

Page 4, line 14- 'N', 'η_I' are not defined in the specification

Page 7, line 17- 'charges' should read 'changes'.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 6-8, 18-20, 22-25 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject

matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

These claims recite the parameter that varies from the input end of the fiber to the output end of the fiber in a manner to 1) maintain a constant power loss per unit length, 2) vary power loss in a controlled way, or 3) compensate for nonlinear power loss being one of the core diameter, core/cladding refractive index ratio, the absorption coefficient, and the scattering coefficient. This is also recited in the specification of the disclosure (See Page 5), however, one skilled in the art would not be enabled to determine how to vary such parameters and in what manner based on the Applicants' disclosure without undue experimentation. The specification additionally provides two purported examples of the claimed invention (See pages 7 and 8 regarding a chemical- and pH-sensitive fiber sensor based on the claimed invention), however, both these examples fail to describe how the fiber structure or parameters are varied to produce the requisite results of 1) maintaining a constant power loss per unit length, 2) varying power loss in a controlled way, or 3) compensating for nonlinear power loss in the optical fiber.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 6, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni et al. (U.S. Patent No. 5572618) in view of Tarbox (U.S. Patent No. 4881793) or Yunoki (U.S. Patent No. 6097874).

DiGiovanni et al. discloses an optical fiber, said fiber (See Figures 2A or 2B) having a core and a sheath (See 22, 24, 26 in Figures 2A and 2B), said fiber having at least one parameter (See Figure 2B; col. 5, lines 28-35, the parameter being a variation in the cladding and/or core diameter due to the presence of the tapered region) that varies from an input end of said fiber to an output end thereof in a manner to provide a power loss per unit length over the length of said fiber (See col. 4, line 18-col. 5, line 35). Digiovanni et al. additionally discloses the one parameter comprising an increase in the diameter of the core from the input to the output end (See Figure 2B; col. 5, lines 28-35; in particular see the tapered region of the fiber in Figure 2B which shows both a change, increasing and decreasing, in the core and cladding diameter of the fiber). DiGiovanni et al. lacks the power loss per unit length being constant over the length of the fiber. However, both Tarbox and Yunoki both teach optical fiber attenuators (See Figures 1 or 2 of Tarbox; Figure 2 of Yunoki) wherein the power loss per unit length is made constant over the length of fiber by careful bending of the fiber (to reduce/adjust bending losses in the attenuator) and by adjustment of the concentration of dopants incorporated into the fiber (to adjust the overall attenuation of the fiber) (See 18 in Figures 1 or 2; col. 2, line 66-col. 3, line 9 of Tarbox; col. 2, lines 12-42; col. 3, lines 1-46 of Yunoki). Therefore, it would

have been obvious to one having ordinary skill in the art at the time the invention was made to have the power loss per unit length being constant over the length of the fiber, as taught by either Tarbox or Yunoki, in the optical fiber of DiGiovanni et al. One would have been motivated to do this to provide easy and accurate control over the attenuation characteristics, while reducing cost of fabrication of the attenuator.

10. Claims 3, 5, 21-22, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni et al. in view of Tarbox or Yunoki as applied to Claims 1 and 17 above, and further in view of Hamburger et al. (U.S. Patent No. 5995686).

DiGiovanni et al. in view of Tarbox or Yunoki discloses the invention as set forth above in Claims 1 and 17, except for the sheath including a cladding fabricated in a manner to be sensitive to a physical quantity or target chemical. However, Hamburger et al. teaches a distributed fiber optic sensor comprising a multimode optical fiber (See 12, 14 in Figures 1 and 2; col. 2, lines 40-65; col. 5, lines 9-15) having a core (See 12 in Figure 1) and a permeable cladding (See 14 in Figure 1 or 2; col. 2, line 66-col. 3, line 10), said cladding including a composition responsive to an external material to generate a light signal characteristic of that response (See col. 3, line 43-63; col. 5, line 16-col. 6, line 9). Hamburger et al. additionally discloses a light sensor at an output end (See 24 in Figure 2) and a light source in an input end (See 22 in Figure 2). Therefore, it would have been obvious to one having ordinary skill at the time the invention was made to have the sheath include a cladding fabricated in a manner to be sensitive to a physical

quantity or target chemical as taught by Hamburger et al., in the optical fiber of DiGiovanni et al. in view of Tarbox or Yunoki. One would have been motivated to do this to provide additional, fine adjustment of the attenuation characteristic throughout the length of the optical fiber.

11. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over DiGiovanni et al. in view of Tarbox or Yunoki as applied to Claim 1 above, and further in view of Cramp et al. (U.S. Patent No. 4560248).

DiGiovanni et al. in view of Tarbox or Yunoki discloses the invention as set forth above in Claim 1, except for the core being fabricated in a manner to be sensitive to a target chemical or a physical quantity. However, Cramp et al. teaches that the core (See 2 of Figure 1; 14 in Figure 2; 22 in Figure 3) of an optical fiber may be modified, such as by making the core porous (See col. 3, line 67-col. 4, line 11) or treating the core with a material sensitive to a target chemical (See col. 4, lines 12-26), to make the fiber more sensitive to the physical parameters of the environment surrounding the fiber. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the core of the fiber, as taught by Cramp et al., in the optical fiber as disclosed by DiGiovanni et al. in view of Tarbox or Yunoki. One would have been motivated to do this to increase the sensitivity of the fiber to variations in parameters of the surrounding environment (e.g. refractive index, temperature, chemical species) since the fiber cladding layer is no longer present.

Art Unit: 2872

Conclusion

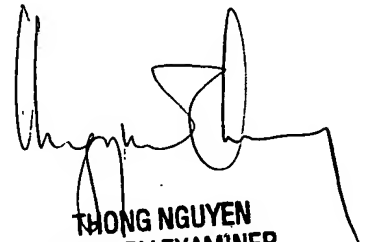
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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7/29/04



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